



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Miranda K. Patrick	Project Number J1424
Project Title Yeast the Great Beast and How He Metabolizes	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this investigation was to determine if yeast produced more carbon dioxide by taking away the oxygen or adding more. It was hypothesized that of the two methods (aerating and fermenting), aerating would produce the greatest volume of carbon dioxide.</p> <p>Methods/Materials This investigation used dry active baking yeast, sugar, and warm water. The volume of carbon dioxide produced was measured using a graduated cylinder to determine the volume of water displaced. Twenty trials were conducted for each of the three experimental groups (aerating, fermenting, and control). For each trial, 500 ml of warm water (44 degrees Celsius) was mixed with 40 grams of sugar, and then was added to 10 grams of dry active yeast. Depending on the experimental group, the yeast-sugar solution was either aerated using an aeration pump for 10 minutes, the oxygen burned out of the jar using Sterno, or nothing was done at all. The yeast mixture was placed in the apparatus and allowed to produce carbon dioxide for 30 minutes. Every 15 minutes, the volume of carbon dioxide produced by the yeast was measured.</p> <p>Results The results showed that the aeration and fermentation experimental groups averaged close to the same volume of carbon dioxide produced (aeration - 522 mL and fermentation - 544 mL). Whereas, the control experimental group's average volume of carbon dioxide produced was less (411 mL).</p> <p>Conclusions/Discussion The results produced by the fermentation experimental group were unexpected and did not support the hypothesis of this investigation. The results of this investigation could be important to help bakers and brewers all over the country produce better products.</p>	
Summary Statement Yeast-sugar solutions were tested, by either aerating or burning off the oxygen during the trials, to determine whether the increase in oxygen would cause yeast to produce a greater volume of carbon dioxide.	
Help Received Parents helped get equipment and supplies.	